

REMARKS

Claims 1-3, 8-11, 16 and 17 have been rejected under 35 U.S.C. § 103. Claims 4-7 and 12-15 are objected to as being dependent upon a rejected base claim.

Claim 1 has been amended. Claims 4-7 and 12-15 have been canceled. New Claims 18-25 have been added.

Claim 1 has been amended to recite, *inter alia*, that component (C) is one or more organic sulfur compounds selected from the group consisting of thiophenols, thionaphthols, halogenated thiophenols, and metal salts thereof. Support for this amendment can be found, for example, on page 17, lines 3-6.

New Claims 18-25 are independent claims which recite the subject matter of Claims 4-7 and 12-15, respectively, along with the limitations of the base claims from which Claims 4-7 and 12-15 depend.

Upon entry of the amendment, Claims 1-3, 8-11, and 16-25 will be all the claims pending in the application.

Response to the Restriction of Claims 1-3, 8-11, 16 and 17 Under 35 U.S.C. § 103

Claims 1-3, 8-11, 16 and 17 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent Publication No. 2003-0229183 to Voorheis et al. (“Voorheis”) in view of U.S. Patent No. 4,955,613 to Gendreau et al. (“Gendreau”).

It is asserted that Voorheis discloses a golf ball that meets all of the presently claimed elements except for the requirement that the core comprises 60 to 100% of a polybutadiene of at least 60 wt% cis-1,4 structure and synthesized using a rare-earth catalyst and the claimed

deflection characteristics. It is further asserted, however, that based on the teachings of Gendreau, it would have been obvious to one of ordinary skill in the art to increase the amount of polybutadiene in the core of Voorheis in order to arrive at the present invention.

With regard to the claimed amount of deflection exhibited by the core and the golf ball, it is asserted that the combined teachings of Voorheis and Gendreau would have the claimed amount of deflection since the core material would be the same.

Applicants' Response

The present invention is directed to a multi-piece solid golf ball comprising a solid core, a mantle of at least one layer, and a cover. The solid core comprises (A) 100 parts by weight of a base rubber which includes 60 to 100 wt% of a polybutadiene of at least 60 wt% cis-1,4 structure and synthesized using a rare-earth catalyst, (B) an unsaturated carboxylic acid or an unsaturated carboxylic acid metal salt or both, (C) one or more organic sulfur compounds selected from the group consisting of thiophenols, thionaphtols, halogenated thiophenols, and metal salts thereof, (D) an inorganic filler and (E) 0.1 to 0.8 parts by weight of organic peroxide. The core has a diameter of 30 to 40 mm and has a deflection when subjected to a load of 980 N (100 kg) of 2.5 to 6.0 mm.

The mantle is made primarily of a thermoplastic resin and has a thickness of at least 0.5 mm and a Durometer D hardness of 30 to 70. In addition, the mantle includes an outermost layer that has the presently claimed Durometer D hardness and is in contact with the cover.

The cover is made primarily of a thermoplastic polyurethane and has a thickness of 0.5 to 2.5 mm and a Durometer D hardness of 40 to 60. The Durometer D hardness of the cover is lower than the Durometer D hardness of the outermost layer of the mantle.

Applicants note that as a result of these characteristics, the presently claimed multi-piece solid golf ball exhibits excellent rebound and flight-performance characteristics.

Furthermore, Applicants respectfully submit that the presently claimed invention is not rendered obvious by the teachings of Voorheis, in view of Gendreau. More specifically, Applicants submit that the combined teachings of Voorheis and Gendreau do not teach or suggest every element recited in each of the claims.

As discussed above, the present invention is characterized, *inter alia*, by a core comprising one or more organic sulfur compounds selected from the group consisting of thiophenols, thionaphtols, halogenated thiophenols, and metal salts thereof.

Applicants submit that Voorheis, however, discloses, via incorporation by reference¹, that suitable sulfur-based curing agents include N-oxydiethylene 2-benzothiazole sulfenamide, N,N-diorthotolyguanidine, bismuth dimethyldithiocarbamate, N-cyclohexyl 2-benzothiazole sulfonamide, N,N-diphenylguanidine and combinations thereof. *See* col. 4, paragraph 32 of Voorheis, and col. 9, lines 1-6, of Patent No. 6,695,718.

¹ Voorheis incorporates the teachings of U.S. Patent Application No. 09/894,960 by reference. U.S. Patent No. 6,695,718, which corresponds to No. 09/894,960, discloses in column 9, lines 1-6 that the examples of preferred sulfur curing agents include N-oxydiethylene 2-benzothiazole sulfenamide, N,N-diorthotolyguanidine, bismuth dimethyldithiocarbamate, N-cyclohexyl 2-benzothiazole sulfonamide, N,N-diphenylguanidine, and combinations thereof

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Applicants respectfully note that the compounds implicitly taught by Voorheis are different from the organic sulfur compounds of the present invention.

Turning to the teachings of Gendreau, Applicants submit that Gendreau discloses a golf ball product that comprises, *inter alia*, about 15 to 85 parts by weight (per 100 parts of rubber) of a group VIII-catalyzed polybutadiene having a Mooney viscosity of no greater than about 50 and about 85 to about 15 phr of a lanthanide-catalyzed polybutadiene having a Mooney viscosity of no greater than about 50.

Applicants respectfully submit, however, that Gendreau does not teach or suggest the addition of an organic sulfur compound to the polybutadiene.

Thus, Applicants submit that Gendreau actually teaches away from the presently claimed golf ball core composition.

With regard to Claim 3, Applicants note that neither Gendreau nor Voorheis suggest that the polybutadiene in the base rubber of the rubber composition is a modified polybutadiene rubber synthesized using a neodymium catalyst and subsequent reaction with a terminal modifier.

In view of the foregoing, Applicants respectfully submit that the rejection of Claims 1-3, 8-11 and 16-17 be reconsidered and withdrawn.

With respect to new Claims 18-25, Applicants note that the subject matter of these new independent claims (*i.e.*, the subject matter of now-canceled Claims 4-7 and 12-15) has already been indicated as allowable. Thus, since new Claims 18-25 contain subject matter of the Claims

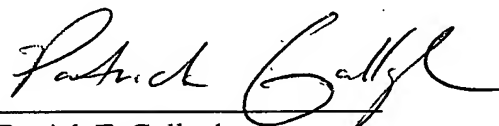
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4-7 and 12-15, along with the limitations of the rejected base claims, Applicants submit that Claims 18-25 should be allowed.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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23373

CUSTOMER NUMBER

Date: September 15, 2004